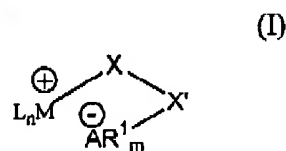
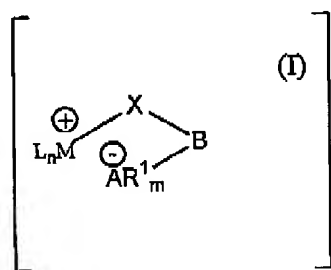


AMENDMENTS TO THE CLAIMS

1. (Previously presented) A zwitterionic transition metal compound of the formula I



where

L are identical or different and are each a π -ligand or an electron donor, n is equal to 1, 2, 3 or 4,

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms,

X' is a hydrocarbon group having 1-40 carbon atoms,

A is an atom of group Ib, IIb, IIIa, IIIb, IVa, Va, Vb, VIb, VIIb or VIIIb of the Periodic Table of the Elements,

R¹ are identical or different and are each a perhalogenated C₁-C₄₀-hydrocarbon radical, and m is equal to 1, 2, 3, 4 or 5.

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2. (original) A transition metal compound as claimed in claim 1, wherein the radicals L are identical or different and are each a π -ligand.
3. (original) A transition metal compound as claimed in claim 1, wherein the radicals L are identical or different and are each an unsubstituted or substituted cyclopentadienyl group.
4. (original) A transition metal compound as claimed in claim 1, wherein the radicals L are linked to one another via a bridge.
5. (original) A transition metal compound as claimed in claim 1, wherein $n=2$ when M is a metal atom of group IVb of the Periodic Table of the Elements.
6. (original) A transition metal compound as claimed in claim 1, wherein M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to 2, L are identical or different and are each a substituted or unsubstituted cyclopentadienyl group, where two radicals L are optionally linked to one another via a bridge Z and Z is CR^2R^3 or SiR^2R^3 or a unit $Si-(CR^2R^3)_x-Si$ which links two fragments $L_nM^+XX'-A-R_m^1$ with one another, where x is an integer from 0 to 10, X and X' together form a three-membered to five-membered hydrocarbon chain which can be saturated or unsaturated and are unsubstituted or substituted by one or more C_1 - C_{20} -hydrocarbon radicals, R^2 and R^3 are identical or different and are each a hydrogen atom, a halogen atom, a C_1 - C_{20} -alkyl group, a C_1 - C_{10} -fluoralkyl group, a C_1 - C_{10} -alkoxy group, a C_6 - C_{14} -

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aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L;

A is an atom of group Ib, IIb, IIIa, IVa, Va, Vb of the Periodic Table of the Elements,

R¹ are identical or different and are each a perfluorinated alkyl or aryl group having from 1 to 20 carbon atoms and

m is equal to 2, 3 or 4.

7. (original) A transition metal compound as claimed in claim 6, wherein

M is zirconium,

n is equal to 2,

L are identical or different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, where Z is CR²R³ or SiR²R³ and R² and R³ are as defined in claim 6,

X and X' together form an unsaturated four-membered hydrocarbon chain whose hydrogen atoms are optionally replaced by C₁-C₂₀-alkyl groups,

A is boron atom,

R¹ are identical and are each a pentafluorophenyl group (C₆F₅) and

m is equal to 3.

8. (original) A catalyst component comprising at least one transition metal compound as claimed in claim 1.

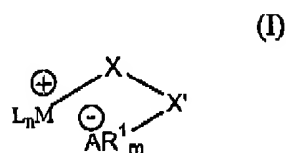
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9. (original) A catalyst component as claimed in claim 8, additionally containing a support.

10. (Previously presented) A process for preparing a compound according to claim 1 of the formula I,



where

L are identical or different and are each a π ligand or an electron donor, n is equal to 1, 2, 3 or 4,

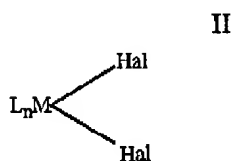
M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms,

X' is a hydrocarbon group having 1-40 carbon atoms,

A is an atom of group Ib, IIb, IIIa, IIIb, IVa, Va, Vb, VIb, VIIb or VIIIb of the Periodic Table of the Elements,

R¹ are identical or different and are each a perhalogenated C₁-C₄₀-hydrocarbon radical, and m is equal to 1, 2, 3, 4 or 5, which comprises reacting a compound of the formula II

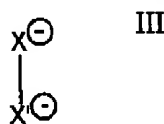
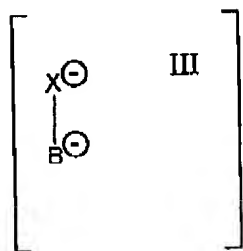


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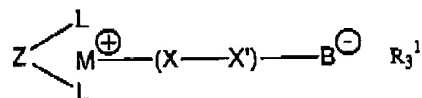
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with a compound of the formula III



and reacting the reaction product with a compound of the formula AR^1_m , where L, n, M, $[\text{X}, \text{B}]$, X , X' , A, R^1 and m in the formulae II, III and AR^1_m are as defined for the formula I and Hal is a halogen atom.

11. (original) A zwitterionic transition metal compound of the formula



wherein: L and L' are identical or different and are each a substituted or unsubstituted cyclopentadienyl group;

Z is a bridge linking together said L and L' and is a group of the formula CR^2R^3 or SiR^2R^3 ;

R^2 and R^3 are identical or different and are each a hydrogen atom, a halogen atom, a C_1 - C_{20} -alkyl group, a C_1 - C_{10} -fluoralkyl group, a C_1 - C_{10} -alkoxy group, a C_6 - C_{14} -aryl group, a C_6 - C_{10} -fluoroaryl group, a C_6 - C_{10} -aryloxy group, a C_2 - C_{10} -alkenyl group, a C_7 - C_{40} -arylalkyl group, a C_7 - C_{40} -alkylaryl group, a C_8 - C_{40} -

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arylalkenyl group, or R^2 and R^3 together with the atoms connected them form one or more rings, and R^2 and R^3 are optionally bonded to L;

M is a metal atom of group IVb of the Periodic Table of the Elements;

X-X' is a 3- to 5-membered saturated or unsaturated hydrocarbon chain which is

unsubstituted or substituted by one or more C_1 - C_{20} -hydrocarbon radicals; and

the R^1 radicals are identical or different and are each a perfluorinated alkyl or aryl group having from 1 to 20 carbon atoms.

12. (original) A catalyst system for olefin polymerization comprising a transition metal compound of claim 11 and, optionally, a catalyst support material.

13. (original) A catalyst system as claimed in claim 12, wherein said catalyst system is essentially free of an aluminoxane except when said catalyst support material is present and is a solid aluminoxane.

14. (original) The catalyst as claimed in claim 8, wherein M is titanium, zirconium or hafnium.

15. (original) The catalyst as claimed in claim 12, wherein M is zirconium.

16. (original) The catalyst as claimed in claim 14, wherein an unsubstituted or M is Zr,
n is equal to 2,

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L are identical or different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, and

Z is $\text{CR}^2 \text{R}^3$ or $\text{SiR}^2 \text{R}^3$ or a unit $\text{Si}-(\text{CR}^2 \text{R}^3)_x-\text{Si}$ which links two fragments $\text{L}_n \text{M}^+$

$\text{XX}'\text{A}-\text{R}_m^1$ with one another, where x is an integer from 0 to 10,

X and X' together form a three-membered to five-membered (C_3 - C_5)-alkyl chain which is saturated or unsaturated and optionally substituted by C_1 - C_{20} -hydrocarbon radicals,

A is a metal of group Ib, IIb, IIIb, IVa, Vb, of the Periodic Table of the Elements,

R^1 are identical or different and are each a pentafluorinated alkyl or aryl group having from 1 to 20 carbon atoms,

R^2 and R^3 are identical or different and are each a hydrogen atom, a halogen atom, a C_1 - C_{20} -alkyl group, a C_1 - C_{10} -fluoralkyl group, a C_1 - C_{10} -alkoxy group, a C_6 - C_{14} -aryl group, a C_6 - C_{10} -fluoroaryl group, a C_6 - C_{10} -aryloxy group, a C_2 - C_{10} -alkenyl group, a C_7 - C_{40} -arylalkyl group, a C_7 - C_{40} -alkylaryl group, a C_8 - C_{40} -arylalkenyl group and

m is equal to 3.

17. (original) The catalyst as claimed in claim 8, wherein

M is zirconium,

n is equal to 2,

L are identical or different and are each a substituted cyclopentadienyl group, where two radicals L are bonded to one another via a bridge Z, where Z is $\text{CR}^2 \text{R}^3$ or $\text{SiR}^2 \text{R}^3$,

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X and X' together form an unsaturated four-membered (C₄)-alkyl chain whose hydrogen atoms can also be replaced by C₁-C₂₀-alkyl groups,

A is a boron atom,

R¹ are identical and are each a pentafluorophenyl group (C₆F₅),

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group and m is equal to 3.

18. (original)The compound as claimed in claim 1, wherein the transition metal

compound of the formula I is selected from the group consisting of

bis(cyclopentadienyl)Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

bis(methylcyclopentadienyl)Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

bis(n-butylcyclopentadienyl)Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

bisindenylZr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

(tert-butylamido)dimethyl(tetramethyl-η⁵-cyclopentadienyl)silaneZr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

bis(2-methylbenzoindenyl)Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

dimethylsilanediylbis(2-methylindenyl)Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

dimethylsilanediylbisindenylZr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

dimethylsilanediylbis(2-methylbenzoindenyl)Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃;

dimethylsilanediyl(2-methylbenzoindenyl)(2-methylindenyl)Zr⁺CH₂CHCHCH₂

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 $B^-(C_6F_5)_3$;dimethylsilanediyl(2-methylbenzoindenyl)(2-methyl-4-phenylindenyl) Zr^+CH_2 $CHCHCH_2B^-(C_6F_5)_3$;dimethylsilanediyl(2-methylindenyl)(4-phenylindenyl) $Zr^+CH_2CHCHCH_2B^-(C_6F_5)_3$;dimethylsilanediylbis(2-methyl-4-phenylindenyl) $Zr^+CH_2CHCHCH_2B^-(C_6F_5)_3$;dimethylsilanediylbis(2-methyl-4,6-diisopropylindenyl) $Zr^+CH_2CHCHCH_2B^-(C_6F_5)_3$;dimethylsilanediylbis(2-methyl-4-naphthylindenyl) $Zr^+CH_2CHCHCH_2B^-(C_6F_5)_3$;isopropylidene(cyclopentadienyl)(fluorenyl) $Zr^+CH_2CHCHCH_2B^-(C_6F_5)_3$;isopropylidene(cyclopentadienyl)(indenyl) $Zr^+CH_2CHCHCH_2B^-(C_6F_5)_3$; $[4-\eta^5\text{-cyclopentadienyl-4,7,7-trimethyl-(}\eta^5\text{-4,5,6,7-tetrahydroindenyl)}Zr^+CH_2CHCHCH_2B^-(C_6F_5)_3$;dimethylsilanediylbis(2-methylindenyl) $Zr^+OCH_2CH_2CH_2B^-(C_6F_5)_3$;dimethylsilanediylbisindenyl $Zr^+OCH_2CH_2CH_2B^-(C_6F_5)_3$;dimethylsilanediylbis(2-methylbenzoindenyl) $Zr^+OCH_2CH_2CH_2B^-(C_6F_5)_3$;dimethylsilanediyl(2-methylbenzoindenyl)(2-methylindenyl) $Zr^+OCH_2CH_2CH_2B^-(C_6F_5)_3$;dimethylsilanediyl(2-methylbenzoindenyl)(2-methyl-4-phenylindenyl) $Zr^+OCH_2CH_2CH_2B^-(C_6F_5)_3$;dimethylsilanediyl(2-methylindenyl)(4-phenylindenyl) $Zr^+OCH_2CH_2CH_2B^-(C_6F_5)_3$;

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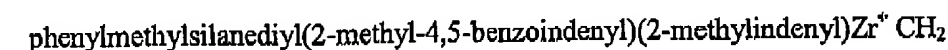
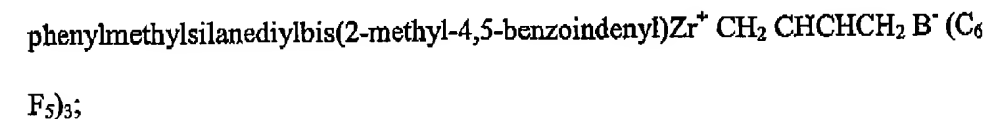
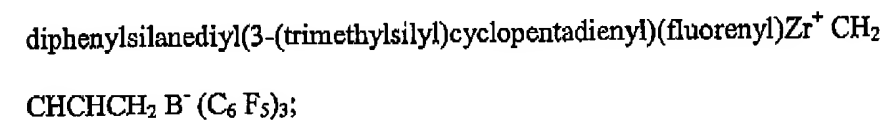
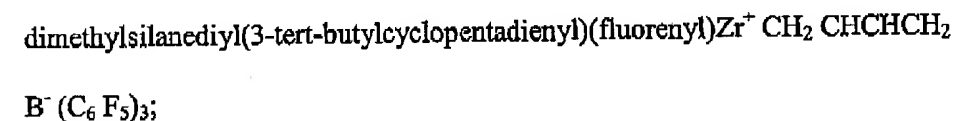
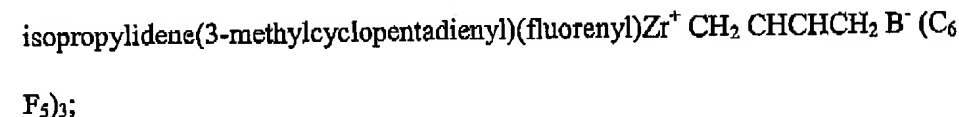
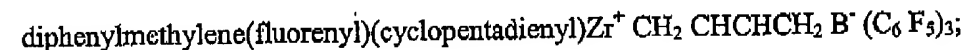
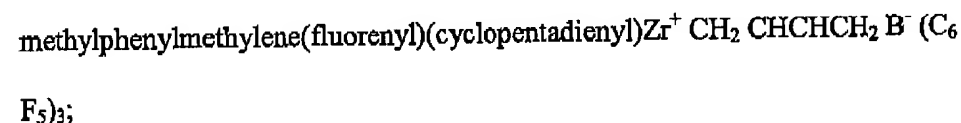
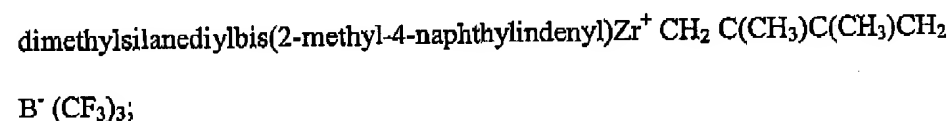
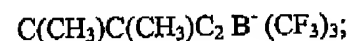
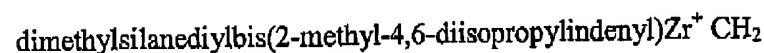
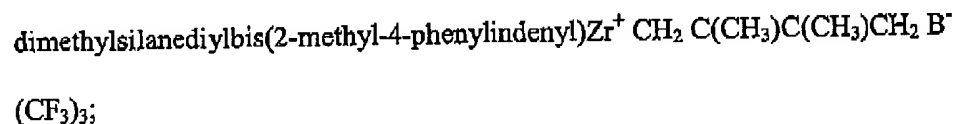
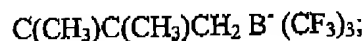
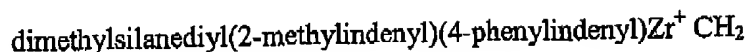
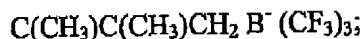
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dimethylsilanediylbis(2-methyl-4-phenylindenyl)Zr⁺ OCH₂ CH₂ CH₂ B⁻ (C₆F₅)₃;
dimethylsilanediylbis(2-methyl-4,6-diisopropylindenyl)Zr⁺ OCH₂ CH₂ CH₂ B⁻
(C₆F₅)₃;
dimethylsilanediylbis(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (CF₃)₃;
dimethylsilanediylbisindenylZr⁺ CH₂ CHCHCH₂ B⁻ (CF₃)₃;
dimethylsilanediylbis(2-methylbenzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (CF₃)₃;
dimethylsilanediyl(2-methylbenzoindenyl)(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂
B⁻ (CF₃)₃;
dimethylsilanediyl(2-methylbenzoindenyl)(2-methyl-4-phenylindenyl)Zr⁺ CH₂
CHCHCH₂ CH₂ B⁻ (CF₃)₃;
dimethylsilanediyl(2-methylindenyl)(4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻
(CF₃)₃;
dimethylsilanediylbis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (CF₃)₃;
dimethylsilanediylbis(2-methyl-4,6-diisopropylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻
(CF₃)₃;
dimethylsilanediylbis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (CF₃)₃;
dimethylsilanediylbis(2-methylindenyl)Zr⁺ CH₂ C(CH₃)C(CH₃)CH₂ B⁻ (CF₃)₃;
dimethylsilanediylbisindenylZr⁺ CH₂ C(CH₃)C(CH₃)CH₂ B⁻ (CF₃)₃;
dimethylsilanediylbis(2-methylbenzoindenyl)Zr⁺ CH₂ C(CH₃)C(CH₃)CH₂ B⁻
(CF₃)₃;
dimethylsilanediyl(2-methylbenzoindenyl)(2-methylindenyl)Zr⁺ CH₂
C(CH₃)C(CH₃)CH₂ B⁻ (CF₃)₃;
dimethylsilanediyl(2-methylbenzoindenyl)(2-methyl-4-phenylindenyl)Zr⁺ CH₂

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 $\text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{phenylmethylsilanediyl}(2\text{-methyl-4,5-benzoindenyl})(2\text{-methyl-4-phenylindenyl})$
 $\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{phenylmethylsilanediyl}(2\text{-methylindenyl})(4\text{-phenylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2$
 $\text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{phenylmethylsilanediylbis}(2\text{-methyl-4-phenylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6$
 $\text{F}_5)_3;$
 $\text{phenylmethylsilanediylbis}(2\text{-ethyl-4-phenylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6$
 $\text{F}_5)_3;$
 $\text{phenylmethylsilanediylbis}(2\text{-methyl-4,6-diisopropylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2$
 $\text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{phenylmethylsilanediylbis}(2\text{-methyl-4-naphthylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^-$
 $(\text{C}_6 \text{F}_5)_3;$
 $\text{ethylenebis}(2\text{-methylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{ethylenebisindenyl}\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{ethylenebis}(2\text{-methyl-4,5-benzoindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{ethylene}(2\text{-methyl-4,5-benzoindenyl})(2\text{-methylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^-$
 $(\text{C}_6 \text{F}_5)_3;$
 $\text{ethylene}(2\text{-methyl-4,5-benzoindenyl})(2\text{-methyl-4-phenylindenyl})\text{Zr}^+ \text{CH}_2$
 $\text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{ethylene}(2\text{-methylindenyl})(4\text{-phenylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{ethylenebis}(2\text{-methyl-4,5-benzoindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$
 $\text{ethylenebis}(2\text{-methyl-4-phenylindenyl})\text{Zr}^+ \text{CH}_2 \text{CHCHCH}_2 \text{B}^- (\text{C}_6 \text{F}_5)_3;$

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ethylenebis(2-methyl-4,6-diisopropylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-ethyl-4,6-diisopropylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-ethyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

dimethylsilanediylbis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

dimethylsilanediylbis(2,3,5-trimethylcyclopentadienyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

1, 6-{bis[methylsilylbis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,6-{bis[methylsilylbis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,6-{bis[methylsilylbis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,6-{bis[methylsilylbis(2-methyl-4,5-benzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,6-{bis[methylsilyl(2-methyl-4-phenylindenyl)(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,2-{bis[methylsilylbis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}ethane;

1,2-{bis[methylsilylbis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}ethane;

1,2-{bis[methylsilylbis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆

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 $F_5)_3 \}} \text{ethane};$ 1,2-{bis[methylsilylbis(2-methyl-4,5-benzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ $F_5)_3 \}} \text{ethane}; \text{ and}$ 1,2-{bis[methylsilyl(2-methyl-4-phenylindenyl)(2-methylindenyl)Zr⁺ CH₂ $CHCHCH_2 B^- (C_6 F_5)_3 \}} \text{ethane}.$

19. (original) The catalyst as claimed in claim 8, wherein the transition metal compound of the formula I is selected from the group consisting of

bis(cyclopentadienyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;bis(methylcyclopentadienyl)Zr⁺ C₂ CHCHCH₂ B⁻ (C₆ F₅)₃;bis(n-butylcyclopentadienyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;bisindenylZr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

(tert-butylamido)dimethyl(tetramethyl-η⁵-cyclopentadienyl)silaneZr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

bis(2-methylbenzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;dimethylsilanediylbis(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;dimethylsilanediylbisindenylZr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;dimethylsilanediylbis(2-methylbenzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

dimethylsilanediyl(2-methylbenzoindenyl)(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

dimethylsilanediyl(2-methylbenzoindenyl)(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

dimethylsilanediyl(2-methylindenyl)(4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

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dimethylsilanediyibis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆F₅)₃;

dimethylsilanediyibis(2-methyl-4,6-diisopropylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻
(C₆F₅)₃;

dimethylsilanediyibis(2-methylbenzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (CF₃)₃;

dimethylsilanediyil(2-methylbenzoindenyl)(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂
B⁻ (CF₃)₃;

dimethylsilanediyil(2-methylbenzoindenyl)(2-methyl-4-phenylindenyl)Zr⁺ CH₂
CHCHCH₂ B⁻ (CF₃)₃;

dimethylsilanediyil(2-methylindenyl)(4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻
(CF₃)₃;

dimethylsilanediyibis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (CF₃)₃;

dimethylsilanediyibis(2-methyl-4,6-diisopropylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻
(CF₃)₃;

dimethylsilanediyibis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (CF₃)₃;

dimethylsilanediyibis(2-methylindenyl)Zr⁺ CH₂ C(CH₃)C(CH₃)CH₂ B⁻ (CF₃)₃;

dimethylsilanediyibisindenylZr⁺ CH₂ C(CH₃)C(CH₃)CH₂ B⁻ (CF₃)₃;

dimethylsilanediyibis(2-methylbenzoindenyl)Zr⁺ CH₂ C(CH₃)C(CH₃)CH₂ B⁻
(CF₃)₃;

dimethylsilanediyil(2-methylbenzoindenyl)(2-methylindenyl)Zr⁺ CH₂
C(CH₃)C(CH₃)CH₂ B⁻ (CF₃)₃;

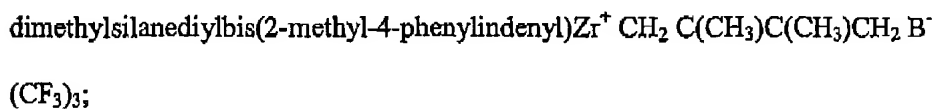
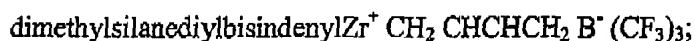
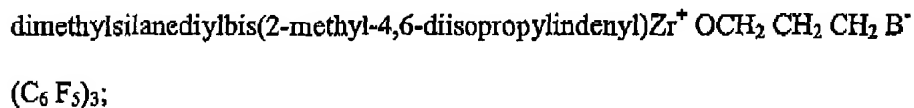
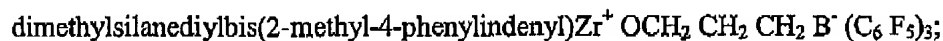
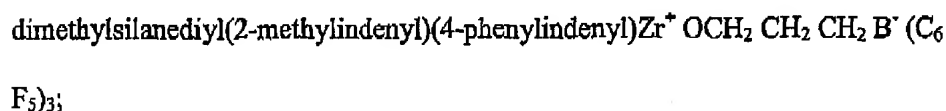
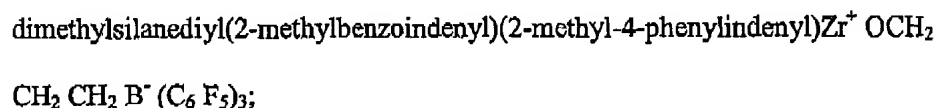
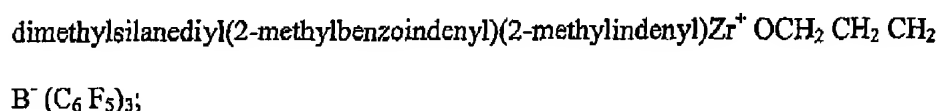
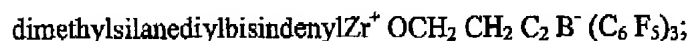
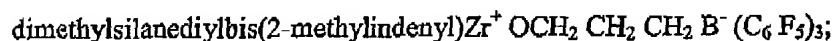
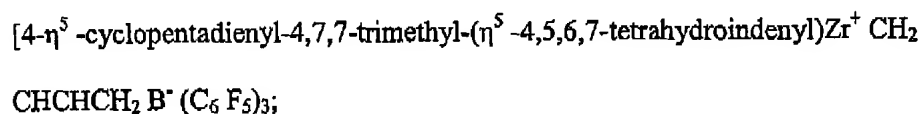
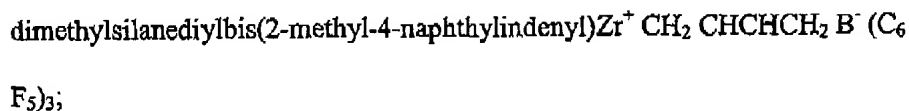
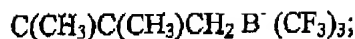
dimethylsilanediyil(2-methylbenzoindenyl)(2-methyl-4-phenylindenyl)Zr⁺ CH₂
C(CH₃)C(CH₃)CH₂ B⁻ (CF₃)₃;

dimethylsilanediyil(2-methylindenyl)(4-phenylindenyl)Zr⁺ CH₂

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dimethylsilanediylbis(2-methyl-4,6-diisopropylindenyl)Zr⁺ CH₂
C(CH₃)C(CH₃)CH₂ B⁻ (CF₃)₃;
dimethylsilanediylbis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ C(CH₃)C(CH₃)CH₂
B⁻ (CF₃)₃;
methylphenylmethylene(fluorenyl)(cyclopentadienyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆
F₅)₃;
diphenylmethylene(fluorenyl)(cyclopentadienyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;
isopropylidene(3-methylcyclopentadienyl)(fluorenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆
F₅)₃;
dimethylsilanediyl(3-tert-butylcyclopentadienyl)(fluorenyl)Zr⁺ CH₂ CHCHCH₂
B⁻ (C₆ F₅)₃;
diphenylsilanediyl(3-(trimethylsilyl)cyclopentadienyl)(fluorenyl)Zr⁺ CH₂
CHCHCH₂ B⁻ (C₆ F₅)₃;
phenylmethylsilanediylbis(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;
phenylmethylsilanediylbisindenylZr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;
phenylmethylsilanediylbis(2-methyl-4,5-benzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆
F₅)₃;
phenylmethylsilanediyl(2-methyl-4,5-benzoindenyl)(2-methylindenyl)Zr⁺ CH₂
CHCHCH₂ B⁻ (C₆ F₅)₃;
phenylmethylsilanediyl(2-methyl-4,5-benzoindenyl)(2-methyl-4-phenylindenyl)
Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;
phenylmethylsilanediyl(2-methylindenyl)(4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂
B⁻ (C₆ F₅)₃;

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phenylmethylsilanediylbis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

phenylmethylsilanediylbis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

phenylmethylsilanediylbis(2-methyl-4,6-diisopropylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

phenylmethylsilanediylbis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebisindenylZr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-methyl-4,5-benzoidenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylene(2-methyl-4,5-benzoidenyl)(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylene(2-methyl-4,5-benzoidenyl)(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-methyl-4,5-benzoidenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-methyl-4,6-diisopropylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-ethyl-4,6-diisopropylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

ethylenebis(2-ethyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

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dimethylsilanediylbis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

dimethylsilanediylbis(2,3,5-trimethylcyclopentadienyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃;

1, 6-{bis[methylsilylbis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,6-{bis[methylsilylbis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,6-{bis[methylsilylbis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,6-{bis[methylsilylbis(2-methyl-4,5-benzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,6-{bis[methylsilyl(2-methyl-4-phenylindenyl)(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}hexane;

1,2-{bis[methylsilylbis(2-methyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}ethane;

1,2-{bis[methylsilylbis(2-ethyl-4-phenylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}ethane;

1,2-{bis[methylsilylbis(2-methyl-4-naphthylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}ethane;

1,2-{bis[methylsilylbis(2-methyl-4,5-benzoindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}ethane; and

1,2-{bis[methylsilyl(2-methyl-4-phenylindenyl)(2-methylindenyl)Zr⁺ CH₂ CHCHCH₂ B⁻ (C₆ F₅)₃]}ethane.

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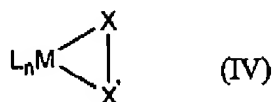
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20. (original) The compound as claimed in claim 1, wherein M is zirconium.

21. (original) The compound as claimed in claim 1, wherein M is a metal atom group
IVb of the Periodic Table of Elements.

[22. A transition metal compound of the formula IV



wherein

L are identical or different and are each a substituted π ligand.

n is equal to 1, 2, 3, or 4.

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the
Elements.

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms.

X' is a hydrocarbon group having 1-40 carbon atoms.]

[23. The transition metal compound as claimed in claim 22, wherein the radicals L
are identical or different and are each a substituted cyclopentadienyl group.

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[24. The transition metal compound as claimed in claim 22, wherein the radicals L are linked to one another via a bridge.]

[25. The transition metal compound as claimed in claim 22, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.]

[26. The transition metal compound as claimed in claim 22, wherein

M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to 2,

L are identical or different and are each a substituted cyclopentadienyl group,

where two radicals L are optionally linked to one another via a bridge Z and

Z is CR²R³ or SiR²R³ or a unit Si-(CR²R³)_x-Si which links two fragments

L_mMXX'A-R¹_m with one another, where x is an integer from 0 to 10,

X and X' together form a three-membered to five-membered hydrocarbon chain which

can be saturated or unsaturated and are unsubstituted or substituted by one or

more C₁-C₂₀-hydrocarbon radicals,

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a

C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoroalkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-

aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl

group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl

group, or R² and R³ together with the atoms connected them form one or more

rings, and R² and R³ are optionally bonded to L.]

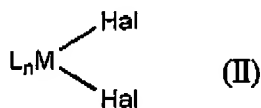
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- [27. The transition metal compound as claimed in claim 22, wherein
- M is zirconium,
- n is equal to 2,
- L are identical or different and are each a substituted cyclopentadienyl group,
- where two radicals L are linked to one another via a bridge Z, where Z is
- CR²R³ or SiR²R³ and
- R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a
- C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-
- aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl
- group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl
- group, or R² and R³ together with the atoms connected them form one or more
- rings, and R² and R³ are optionally bonded to L,
- X and X' together form an unsaturated four-membered hydrocarbon chain whose
- hydrogen atoms are optionally replaced by C₁-C₂₀-alkyl groups.]

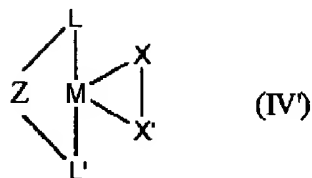
- [28. A process for preparing the compound as claimed in claim 22,
- which comprises reacting a compound of the formula II



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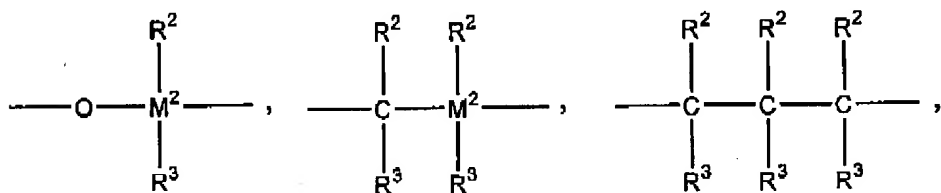
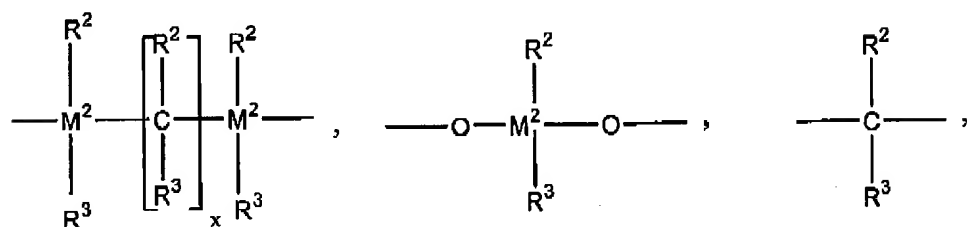
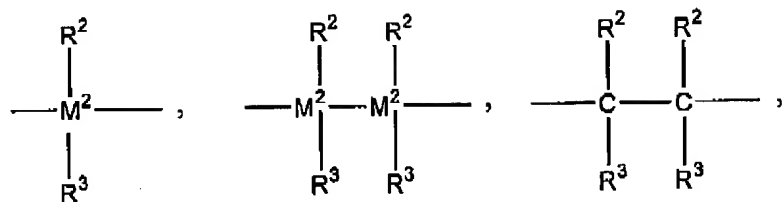
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with a compound of the formula IIIand reacting the reaction product with a compound of the formula AR^1_m , where L, n,M, X and X' in the formulae II and III are defined for the formula IV and Halis a halogen atom.][29. A transition metal compound of the formula IV 'whereL and L' are identical or different and are each a π ligand or an electron donor,M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms,X' is a hydrocarbon group having 1-40 carbon atoms,Z is

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$=\text{BR}_2$, $-\text{AlR}^2$, $-\text{Ge}-$, $-\text{O}-$, $-\text{S}-$, $=\text{SO}$, $=\text{SO}_2$, $-\text{NR}_2$, $=\text{CO}$, $=\text{PR}^2$ or $=\text{P(O)R}^2$, where R^2

and R^3 are identical or different and are each a hydrogen atom, a halogen atom,

a C_1 - C_{20} -alkyl group, a C_1 - C_1 -fluoroalkyl group, a C_1 - C_{10} -alkoxy group, a C_6 -

C_{14} -aryl group, a C_6 - C_{10} -fluoroaryl group, a C_6 - C_{10} -aryloxy group, a C_2 - C_{10} -

alkenyl group, a C_7 - C_{40} -arylalkyl group, a C_7 - C_{40} -alkylaryl group, a C_8 - C_{40} -

arylalkenyl group and x is a number from zero to 18, or R^2 and R^3 together with

the atoms-connecting them form one or more rings and R^2 or/and R^3 can be

bonded to L and M^2 is silicon, germanium or tin.]

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- [30. The transition metal compound as claimed in claim 29, wherein the radicals L are identical or different and are each an unsubstituted or substituted cyclopentadienyl group.]
- [31. The transition metal compound as claimed in claim 29, wherein the radicals L are linked to one another via a bridge.]
- [32. The transition metal compound as claimed in claim 29, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.]
- [33. The transition metal compound as claimed in claim 29, wherein
M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to
2,
L are identical or different and are each a substituted or unsubstituted
cyclopentadienyl group, where two radicals L are optionally linked to one
another via a bridge Z and
Z is CR²R³ or SiR²R³ or a unit Si-(CR²R³)_x-Si which links two fragments
L_nM^{XX} ' A-R¹_m with one another, where x is an integer from 0 to 10,
X and X ' together form a three-membered to five-membered hydrocarbon chain which
can be saturated or unsaturated and are unsubstituted or substituted by one or
more C₁-C₂₀-hydrocarbon radicals,

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R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.]

[34. The transition metal compound as claimed in claim 29, wherein

M is zirconium,

n is 2,

L are identical or different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, where Z is CR²R³ or SiR²R³,

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.

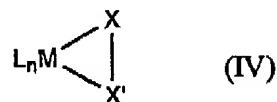
X and X' together form an unsaturated four-membered hydrocarbon chain whose hydrogen atoms are optionally replaced by C₁-C₂₀-alkyl groups.]

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[35. A transition metal compound of the formula IV



wherein

L are different if n is 2, 3 or 4, and are each a π ligand or electron donor.

n is equal to 1, 2, 3, or 4.

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements.

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms.

X' is a hydrocarbon group having 1-40 carbon atoms.]

[36. The transition metal compound as claimed in claim 35, wherein the radicals L are different and are each an unsubstituted or substituted cyclopentadienyl group.]

[37. The transition metal compound as claimed in claim 35, wherein the radicals L are linked to one another via a bridge.]

[38. The transition metal compound as claimed in claim 35, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.]

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[39. The transition metal compound as claimed in claim 35, wherein

M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to

2,

L are different and are each a substituted or unsubstituted cyclopentadienyl group,

where two radicals L are optionally linked to one another via a bridge Z and

Z is CR²R³ or SiR²R³ or a unit Si-(CR²R³)₂-Si which links two fragments

L_mM^xXX' A-R¹_m with one another, where x is an integer from 0 to 10,

X and X' together form a three-membered to five-membered hydrocarbon chain which

can be saturated or unsaturated and are unsubstituted or substituted by one or

more C₁-C₂₀-hydrocarbon radicals,

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a

C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-

aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl

group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₃-C₄₀-arylalkenyl

group, or R² and R³ together with the atoms connected them form one or more

rings, and R² and R³ are optionally bonded to L.]

[40. The transition metal compound as claimed in claim 35, wherein

M is zirconium,

n is 2,

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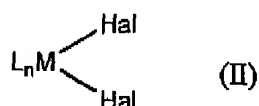
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L are different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, where Z is CR²R³ or SiR²R³ and

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.

X and X' together form an unsaturated four-membered hydrocarbon chain whose hydrogen atoms are optionally replaced by C₁-C₂₀-alkyl groups.]

[41. A process for preparing the compound as claimed in claim 35, which comprises reacting a compound of the formula II



with a compound of the formula III



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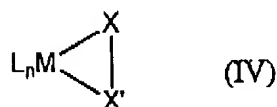
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and reacting the reaction product with a compound of the formula AR^1_m , where L , n ,

M , X and X' in the formulae II and III are defined for the formula IV,

Hal is a halogen atom.]

[42. A transition metal compound of the formula IV



wherein

L are identical or different and are each a π ligand or electron donor,

n is equal to 1, 2, 3, or 4,

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom, a C_6 - C_{14} -aryl group, a C_7 - C_{40} -arylalkyl group, a C_7 - C_{40} -alkylaryl group or a C_8 - C_{40} -arylalkenyl group,

X' or a hydrocarbon group having 1-40 carbon atoms.]

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- [43. The transition metal compound as claimed in claim 42, wherein the radicals L are different and are each an unsubstituted or substituted cyclopentadienyl group.]
- [44. The transition metal compound as claimed in claim 42, wherein the radicals L are linked to one another via a bridge.]
- [45. The transition metal compound as claimed in claim 42, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.]
- [46. The transition metal compound as claimed in claim 42, wherein
M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to
2,
L are different and are each a substituted or unsubstituted cyclopentadienyl group,
where two radicals L are optionally linked to one another via a bridge Z and
Z is CR²R³ or SiR²R³ or a unit Si-(CR²R³)_x-Si which links two fragments
L₀M¹XX' A-R_m¹ with one another, where x is an integer from 0 to 10,
X and X' together form a three-membered or five-membered hydrocarbon chain which
can be saturated or unsaturated and are unsubstituted or substituted by one or
more C₁-C₂₀-hydrocarbon radicals,
R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a
C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-

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aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.]

[47. The transition metal compound as claimed in claim 42, wherein

M is zirconium,

n is 2,

L are different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, where Z is CR²R³ or SiR²R³ and

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.]

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[48. A compound selected from the group consisting of

Bis(methylcyclopentadienyl)ZrCH₂CHCHCH₂;
Bis(n-butyl-cyclopentadienyl)ZrCH₂CHCHCH₂;
BisindenylZrCH₂CHCHCH₂;
(tert.butylamido)dimethyl(tetramethyl- η^5 -cyclopentadienyl)sil-
lan-Zr⁺CH₂CHCHCH₂;
Bis(2-methylbenzoidenyl)ZrCH₂CHCHCH₂;
Dimethylsilandiylbis(2-methyl-indenyl)ZrCH₂CHCHCH₂;
DimethylsilandiylbisindenylZr⁺CH₂CHCHCH₂;
Dimethylsilandiylbis(2-methylbenzoidenyl)ZrCH₂CHCHCH₂;
Dimethylsilandiyl(2-methylbenzoidenyl)(2-methyl-indenyl)
ZrCH₂CHCHCH₂;
Dimethylsilandiyl(2-methylbenzoidenyl)(2-methyl-4-phenylindenyl)
ZrCH₂CHCHCH₂;
Dimethylsilandiyl(2-methylindenyl)(4-phenylindenyl)ZrCH₂CHCHCH₂;
Dimethylsilandiylbis(2-methyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Dimethylsilandiylbis(2-methyl-4,6-diisopropyl-indenyl)Zr⁺
CH₂CHCHCH₂;
Dimethylsilaniylbis(2-methyl-4-naphtyl-indenyl)ZrCH₂CHCHCH₂;
Isopropyliden(cyclopentadienyl)(fluorenyl)ZrCH₂CHCHCH₂;
Isopropyliden(cyclopentadienyl)(indenyl)ZrCH₂CHCHCH₂;
(4-(η^5 -Cyclopentadienyl)-4,7,7-trimethyl-(η^5 -4.5.6.7-tetrahydro-
indenyl)ZrCH₂CHCHCH₂;
Dimethylsilandiylbis(2-methyl-indenyl)ZrOCH₂CH₂CH₂;
DimethylsilandiylbisindenylZrOCH₂CH₂CH₂;
Dimethylsilandiylbis(2-methylbenzoidenyl)ZrOCH₂CH₂CH₂;
Dimethylsilandiyl(2-methylbenzoidenyl)(2-methyl-indenyl)
ZrOCH₂CH₂CH₂;
Dimethylsilandiyl(2-methylbenzoidenyl)(2-methyl-4-phenylindenyl)
ZrOCH₂CH₂CH₂;
Dimethylsilandiyl(2-methylindenyl)(4-phenylindenyl)ZrOCH₂CH₂CH₂;
Dimethylsilandiylbis(2-methyl-4-phenyl-indenyl)ZrOCH₂CH₂CH₂;
Dimethylsilandiylbis(2-methyl-4,6-diisopropyl-indenyl)
ZrOCH₂CH₂CH₂;
Dimethylsilandiylbis(2-methyl-indenyl)ZrCH₂C(CH₃)C(CH₃)CH₂;
DimethylsilandiylbisindenylZrCH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilandiylbis(2-methylbenzoidenyl)Zr⁺CH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilandiyl(2-methylbenzoidenyl)(2-methyl-indenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilandiyl(2-methylbenzoidenyl)(2-methyl-4-phenylindenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;

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Dimethylsilandiyl(2-methylindenyl)(4-phenylindenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilandiylbis(2-methyl-4-phenyl-indenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilandiylbis(2-methyl-4,6-diisopropyl-indenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilandiylbis(2-methyl-4-naphtyl-indenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Methylphenylmethylen-(fluorenyl)(cyclopentadienyl)ZrCH₂CHCHCH₂;
Diphenylmethylen-(fluorenyl)(cyclopentadienyl)ZrCH₂CHCHCH₂;
Isopropyliden-(3-methylcyclopentadienyl)(fluorenyl)
ZrCH₂CHCHCH₂B⁻(C₆F₅)₃;
Dimethylsilandiyl-(3-tert.-Butylcyclopentadienyl)(fluorenyl)
ZrCH₂CHCHCH₂;
Diphenylsilandiyl-(3-(trimethylsilyl)cyclopentadienyl)(fluorenyl)
ZrCH₂CHCHCH₂;
Phenylmethylsilandiylbis(e-methyl-indenyl)ZrCH₂CHCHCH₂;
PhenylmethylsilandiylbisindenylZrCH₂CHCHCH₂;
Phenylmethylsilandiylbis(2-methyl-4,5-benzoindenyl)ZrCH₂CHCHCH₂;
Phenylmethylsilandiylbis(2-methyl-4,5-benzoindenyl)(2-methyl
-indenyl)ZrCH₂CHCHCH₂;
Phenylmethylsilandiyl(2-methyl-4,5-benzoindenyl)(2-methyl-4
-phenylindenyl)ZrCH₂CHCHCH₂;
Phenylmethylsilandiyl(2-methylindenyl)(4-phenylindenyl)
ZrCH₂CHCHCH₂;
Phenylmethylsilandiylbis(2-methyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Phenylmethylsilandiylbis(2-ethyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Phenylmethylsilandiylbis(2-methyl-4,6-diisopropyl-indenyl)
ZrCH₂CHCHCH₂;
Phenylmethylsilandiylbis(2-methyl-4-naphtyl-indenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-indenyl)ZrCH₂CHCHCH₂;
EthylenbisindenylZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-4,5-benzoindenyl)ZrCH₂CHCHCH₂;
Ethylen(2-methyl-4,5-benzoindenyl)(2-methyl-indenyl)ZrCH₂CHCHCH₂;
Ethylen(2-methyl-4,5-benzoindenyl)(2-methyl-4-phenylindenyl)
ZrCH₂CHCHCH₂;
Ethylen(2-methylindenyl)(4-phenylindenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-4,5-benzoindenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-4,6-diisopropyl-indenyl)ZrCH₂CHCHCH₂;

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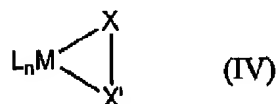
Ethylenbis(2-methyl-4-naphtyl-indenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-ethyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-ethyl-4,6-diisopropyl-indenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-ethyl-4-naphtyl-indenyl)ZrCH₂CHCHCH₂;
Dimethylsilandiylbis(2-ethyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Dimethylsilandiylbis(2,3,5-trimethylcyclopentadienyl)
ZrCH₂CHCHCH₂;
1,6-Bis[methylsilyl-bis(2-methyl-4-phenyl-indenyl)Zr⁺CH₂CHCHCH₂
B⁻(C₆F₅)₃]}hexan;
1,6-Bis[methylsilyl-bis(2-ethyl-4-phenyl-indenyl)
Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃]}hexan;
1,6-Bis[methylsilyl-bis(2-methyl-4-naphtyl-indenyl)Zr⁺CH₂CHCHCH₂
B⁻(C₆F₅)₃]}hexan;
1,6-Bis[methylsilyl-bis(2-methyl-4,5-benzoindenyl)Zr⁺CH₂CHCHCH₂
B⁻(C₆F₅)₃]}hexan;
1,6-Bis[methylsilyl-(2-methyl-4-phenyl-indenyl)(2-methyl-inde-
nyl)Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃]}hexan;
1,2-Bis[methylsilyl-bis(2-methyl-4-phenyl-indenyl)Zr⁺CH₂CHCHCH₂
B⁻(C₆F₅)₃]}ethan;
1,2-Bis[methylsilyl-bis(2-ethyl-4-phenyl-indenyl)Zr⁺CH₂CHCHCH₂
B⁻(C₆F₅)₃]}ethan;
1,2-Bis[methylsilyl-bis(2-methyl-4-naphtyl-indenyl)Zr⁺CH₂CHCHCH₂
B⁻(C₆F₅)₃]}ethan;
1,2-Bis[methylsilyl-bis(2-methyl-4,5-benzoindenyl)Zr⁺CH₂CHCHCH₂
B⁻(C₆F₅)₃]}ethan;and
1,2-Bis[methylsilyl-(2-methyl-4-phenyl-indenyl)(2-methyl-inde-
nyl)Zr⁺CH₂CHCHCH₂B⁻(C₆F₅)₃]}ethan.]

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[49. A transition metal compound of the formula IV



wherein

L are identical or different and are each a π ligand or electron donor,

n is equal to 1, 2, 3, or 4,

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms,

X' is a hydrocarbon group having 1-40 carbon atoms,

with the proviso that at least one L is a substituted or unsubstituted indenyl.]

[50. The transition metal compound as claimed in claim 49, wherein the radicals L are linked to one another via a bridge.]

[51. The transition metal compound as claimed in claim 49, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.]

[52. The transition metal compound as claimed in claim 49, wherein

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M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to 2,

where two radicals L are optionally linked to one another via a bridge Z and

Z is CR²R³ or SiR²R³ or a unit Si-(CR²R³)_x-Si which links two fragments

L_mM'XX'A-R¹_m with one another, where x is an integer from 0 to 10,

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a

C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-

aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl

group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl

group, or R² and R³ together with the atoms connected them form one or more

rings, and R² and R³ are optionally bonded to L.]

[53. The transition metal compound as claimed in claim 49, wherein

M is zirconium,

n is 2,

where two radicals L are linked to one another via a bridge Z, wherein

Z is CR²R³ or SiR²R³ and

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a

C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-

aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl

group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl

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group, or R^2 and R^3 together with the atoms connected them form one or more rings, and R^2 and R^3 are optionally bonded to L.]

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